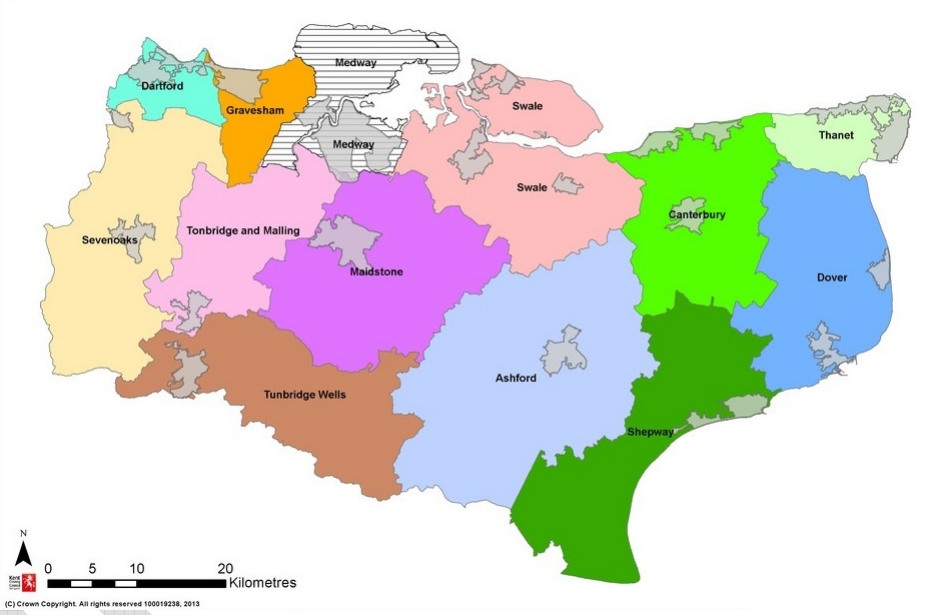
DESIGN RATIONALE STATEMENT



4/18/2018

Design Rationale Statement

The purpose of this document is to detail the design rationale that will meet Schedule 6 Part 2 Appendix 1/10 *Permanent Works to be designed by the Contractor*.

Design Rationale Statement

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DESIGN RATIONALE STATEMENT

Definitions

DfL	Designs for Lighting
KCC	Kent County Council
District	This defined as the following 12 areas • Ashford • Canterbury • Dartford • Dover • Gravesham • Maidstone • Sevenoaks • Shepway • Swale • Thanet • Tonbridge & Malling • Tunbridge Wells
Parish	Defined as a small local government administrative area. Typically in rural areas
Ward	Defined as a division or district of a city or town, as for administrative or political purposes, typically in urban areas
Pedestrian Crossings	Zebra Crossing All signalized crossings
Informal Crossing Point	A facility to help pedestrians cross, but where no legal precedence or traffic signals is provided. Will be identified through the electrical apparatus listed in the inventory. Islands without electrical apparatus listed in the inventory will not be considered.

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1/10.9 Submission and Acceptance of Designs – Initial Assessment

The following information will be agreed on a District by District basis between DfL and KCC at a pre design meeting for each District. This will be presented in an Initial Design Review Schedule as Detailed in Appendix A – Initial Design Review Schedule. This removes the need for the 2 week initial review period. This will take place twice in each district, once for Minors, Footpaths/Alleyways and once for Majors and Town Centres.

- Environmental Zone [To be agreed by Electoral Ward].
- Isolated Lights [Flag to Authority for possibility of removal].
- Discrepancies in Network Hierarchy Information – where it is not easily distinguishable as to what class the road should be.
- Proposed changes to Network Hierarchy Information.
- Flag number of existing LED assets against total assets per road.
- Flag number of Ornate's assets against total assets per road.
- Flag number of 8m/10m assets against total assets per road (Minors / Footpaths)
- Flag number of Owners per road against total assets.

Further Initial Design Reviews may be required for assets that require further detailed analysis.

1/10.10 Submission and Acceptance of Designs – Detailed Designs

The following information will be included as part of the detailed design submission.

- Lighting Reality Outdoor Calculation, to detail the following.
    - Contours
    - Base Layer
        - OS Tile
        - Belisha Beacons
        - Centre Island Posts
        - Traffic Lights
- Lighting Reality Roadway Calculations (Majors only – if applicable)
- Design Schedule – Appendix C – Example Design Schedule

1/10.3 Lighting Classes - Residential

ENVIRONMENTAL ZONES

In rural areas, the environmental classification is reduced from E3/E4 to E1/E2, as per the ILP's *Guidance Notes for the Reduction of Obtrusive Light GN01:2011.*

This will reduce the effect of sky glow in sensitive areas, as well as reducing the impact on the local Flora and Fauna.

Therefore, in line with Table 1/10/1 of the Contract, and following the principles of BS5489-1:2013, the lighting level will be reduced by one class. (Conflict areas also reduced to P classes).

Any changes to the Street Lighting Network Hierarchy Classification will be detailed as part of the initial assessment, where possible. Typically, an Electoral Ward will be defined as either E1/E2 or E3/E4.

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Table 1/10/1 – Lighting Classes [Residential Areas]						
Street Lighting Network Hierarchy classification	Lighting Class: except conflict areas		Lighting Class: conflict areas		Lighting Class: signal controlled conflict areas	
Environmental Zone	E1/E2	E3/E4	E1/E2	E3/E4	E1/E2	E3/E4
Minor	P5	P4	P4	P3	P4	P3
Footpaths & Alleyways	P6	P5	N/A			

TABLE 1

S/P RATIOS

The S/P ratios for each lantern / manufacturer will be detailed in Appendix A – Initial Design Review.

CONTRIBUTION

For residential roads where the lighting class is not achieved, contribution from the adjacent road will not be considered as the exact existing or proposed specification is unlikely to be known at the time of design. Therefore, the designs are based on a worst case scenario, and considered under its own merits, with the actual lighting levels upon completion exceeding that calculated.

For Traffic Routes where the lighting from multiple roads forms part of a major conflict area (Roundabout / Crossroads) contribution from the adjacent road will be considered.

1/10.3 Lighting Classes – Traffic Routes

DETERMINATION OF LIGHTING CLASS

All Traffic Routes will have the basis of their lighting classes selected in accordance with tables A.2 and A.3 of the British standard and Table 1/10/1 of the Contract.

Some roads may be classified as Majors in the inventory, but do not meet the characteristics of a traffic route, as determined by BS5489-1:2013. Therefore, the following characteristics will be used to determine whether the road should be designed as a residential road (P Class) or traffic route (M Class):

- Columns of ≤8m in height.
- The road has a 20mph speed limit (more commonly associated with residential roads to improve pedestrian safety).
- The road has speed humps (more commonly seen on residential roads to reduce the speed of vehicles and to enhance pedestrian safety).
- The road has parked cars on one or both sides for the majority of its length (Parked cars on traffic routes are usually restricted due to safety reasons).
- Small local village centers where there are clusters of shops as detailed in BS5489-1:2013 Note 6 point a.

If the designer deems the road to meet the characteristics above, it shall be lit in accordance with Table 1/10/1 of the Contract, and following the principles of BS5489-1:2013.

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Table 1/10/1 – Lighting Classes [Majors - P Classes]						
Street Lighting Network Hierarchy classification	Lighting Class: except conflict areas		Lighting Class: conflict areas		Lighting Class: signal controlled conflict areas	
Environmental Zone	E1/E2	E3/E4	E1/E2	E3/E4	E1/E2	E3/E4
8m Columns	P3	P2*	P2	P1	P2	P1
≤6m Columns	P4	P3	P3	P2	P3	P2

TABLE 2

**Note: Roads with 8m columns and no footways will be designed to a comparable C Class.*

If the designer deems the road to be more in line with a "Minor" or "Footpath/Alleyway", it will be designed in accordance with that the Residential section of this Design Rationale Statement.

TRAFFIC FLOW

For the purposes of design, traffic flows will be considered as "Low to Moderate", as per the traffic route lighting classes detailed in Table 1/10/1 of the Contract.

JUNCTION DENSITY

Typically, within the British Standards, Traffic Routes are defined by a junction density of either "High" or "Low". High junction density is defined as junction centres spaced less that 3km apart. For the purpose of the Contract, junctions will be defined as another classified road joining the road being calculated.

In line with Table 1/10/1 of the Contract, and following the principles of BS5489-1:2013, the lighting level will be reduced by one class for traffic routes with a speed less than 40 mph.

Table 1/10/1 – Lighting Classes [Majors - Traffic Route]						
Street Lighting Network Hierarchy classification	Lighting Class: except conflict areas		Lighting Class: conflict areas None Signal Controlled		Lighting Class: signal controlled conflict areas	
Major	Traffic Speed		Traffic Speed		Traffic Speed	
	≤40mph	>40mph	≤40mph	>40mph	≤40mph	>40mph
Dual Carriageway / Low-Moderate Flow / High Junction Density or Single Carriageway / Low-Moderate Flow	M4	M3*	C3 (C4 Approach**)	C2* (C3 Approach**)	C4	C3*
Dual Carriageway /Low-Moderate Flow / Low Junction Density	M5	M4	C4 (C5 Approach**)	C3 (C4 Approach**)	C5	C4

TABLE 3

**Note: Original Contract Class*

***Note: Approaches to Non-signalized crossings will be lit to the same class as the conflict area.*

DESIGNING OF TRAFFIC ROUTES

Step 1 – M Classes will be lit to the corresponding C series of lighting classes as detailed in BS5489-1:2013 Table A.1 [Lighting classes of comparable level].

Step 2 – Columns that form part of a conflict area will be designed using area calculations to the appropriate class and extents. Any changes in the speed limit of the road could have an impact on the lighting class for the road in relation to M class roads and the extents of any approaches to any identified conflict areas as per ILP PLG02 – Application of Conflict Areas.

Step 3 – Where columns are identified as being suitable for removal, without affecting the lighting class requirements, they will remain in the calculation with the height set at *'0m'*. Approval from the Authority will confirm the columns suitability for removal and an SMI issued for the works.

Step 4 – Roads or sections of the road with ≤6m height columns will be considered for design in accordance with amended table 1/10/1 – Lighting Classes [Residential Areas] above, by the designer.

1/10.3 Lighting Classes – Town Centres

Typically, within the British Standards, Town Centres are defined by the type of traffic and the traffic flow. For the purpose of the Contract, Town Centres will be considered as *'Normal Traffic Flow'*, and City Centres will be defined as '*High traffic flow'*. The main '*High Street'* for the Town or City Centre will be considered as Environmental Zone *'E4'*, with adjacent roads considered as *'E3'*.

The roads identified in Appendix F – Town Centre Special Requirements will be designed in accordance with the table below.

Table 1/10/1 – Lighting Classes [City and Town Centres]				
Type of traffic	Normal Traffic Flow		High Traffic Flow	
	E3	E4	E3	E4
Pedestrian thorough fair	P2	P1	P2	P1
Pedestrian Only	C4	C3	C3	C2
Mixed vehicle and pedestrian with separate footways	C3	C2	C2	C1
Mixed vehicle and pedestrian on same surface	C2	C1	C1	C1

TABLE 4

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DESIGNING OF TOWN CENTRES

Step 1 – The remaining inventory listed as *'Town Centers'* will be designed to lighting class C4, as per the Table 1/10/1 of the Contract. Footpaths are to be included into calculations.

Step 2 – Columns that form part of a conflict area adjoining a Major Road will be lit in accordance with the rationale for Major roads.

Step 3 – Where columns are identified as being suitable for removal, without affecting the lighting class requirements, they will remain in the calculation with the height set at *'0m'*. Approval from the Authority will confirm the columns suitability for removal and an SMI issued for the works.

Step 4 – Contribution lights not to be considered.

1/10.3 Lighting Classes – Glare

For roads lit to M lighting classes, including roads design to comparable C classes, lanterns will achieve a glare shall be controlled by ensuring that the relevant value of threshold increment (TI) for the class in BS EN 13201-2:2003 are not exceeded. At conflict areas on major roads where TI cannot be calculated the installed luminous intensity class shall be ≥G3.

1/10.4 Maintenance factors

The Maintenance Factors for each lantern / manufacturer will be detailed in Appendix B – Maintenance Factors & S/P Ratios. These will be based on an LED luminaire reliability of L80 B10. The minimum performance requirements shall be 100,000 hours at an ambient temperature of 25ºC.

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1/10.5 Conflict Areas

MAJORS

Description	Include Approach	
	P Class	M Class
Junctions where two or more traffic routes meet (M class)	N/A	X
Complex junctions *	X	X
Roundabouts and mini roundabouts *	X	X
Pedestrian Crossing Areas (Refer to Design of Pedestrian Crossings for further information).	✓	✓
Pedestrian Crossings – Signalised	✓	Not a conflict area **
Pedestrian Crossings – Non-signalised (Zebra crossings only).	✓	✓
Horizontal traffic calming features e.g. chicanes and build outs	✓	✓
Turning lanes	X	X
Turning lane with a Signalised crossing point	✓	Not a conflict area **
Turning lane with a Non-signalised crossing point	✓	✓
Level Crossing	✓	✓

TABLE 5

** Note: In case of junctions/roundabout of P Classes and Traffic Routes, road lighting class to be considered according to corresponding table 1/10/1 – Lighting Classes [Majors - P Classes] or 1/10/1 – Lighting Classes [Majors - Traffic Route]. (Approaches to junctions and roundabouts are not to be considered).*

*** Note: According to the table 1/10/1 – Lighting Classes [Majors - Traffic Route]*

MINORS

Description	Include Approach
Roundabouts – Where column heights are >6m *	✓
All residential approaches to roundabouts where at least one other approach road is considered a major *	✓
Non-signalized crossings (Zebra Crossings, as identified from the inventory).	✓
Signalised Crossings (as identified by the Traffic Light inventory – not including where the crossing forms part of a junction.)	✓
Level Crossing	✓

Table 6

* Note: in accordance to amended table 1/10/1 – Lighting Classes [Residential Areas] above.

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DESIGN OF PEDESTRIAN CROSSINGS

Pedestrian crossing areas, meeting the Design Rationale Statement requirements, shall be designed as conflict areas correlating to their original traffic route lighting class designation, as detailed in table 1/10/1.

Pedestrian crossings points in town centre's are covered within the relevant conflict area class proposed for town centres.

Typically, informal crossing points will not be treated as conflict areas as the traffic flows of pedestrian movements are not deemed to be significant, unless the crossing point is adjacent to the following areas.

- Frontage and entrance of schools and hospitals
- Pedestrian access areas or egress points to train, tube stations etc.
- Pedestrian access areas or egress points to car parks having more than 100 parking spaces.

If the lighting levels on any crossing area and its approaches do not meet any of the lighting requirements then it shall be highlighted in the DVR process stated in Appendix E – Design Variation Requests.

EXTENTS – TRANSVERSE

Conflict areas will only include the adjacent footways should the usage be deemed high. This will typically be in the following areas.

- Frontage and entrance of schools and hospitals
- Pedestrian access areas or egress points to train, tube stations etc.
- Pedestrian access areas or egress points to car parks having more than 100 parking spaces.
- City Centre areas adjacent to shops or shopping centres.

EXTENTS – LONGITUDINAL

Conflict areas will extend to the distances prescribed in PLG02. For dual carriageways, only the approach road is considered a Conflict Area.

1/10.7 Isolated Lights

Isolated lights will be identified during the detailed design process, and a suitable lantern provided to ensure the minimum required levels are achieved across the full footway and/or roadway width, as far as reasonably practicable.

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Ornate Lanterns

All Ornate lanterns on Minor roads will be replaced on a one for one and in accordance with Table 7 if the following conditions are met:

- Height of ≤6m.
- No local facilities or shopping centres.
- No student or large scale accommodation blocks.

Street Lighting Network Hierarchy classification	Lighting Class: except conflict areas	
Environmental Zone	E1/E2	E3/E4
Muirfield / Birkdale - road	18W	22W* (max)
Muirfield / Birkdale - footpath	18W	

TABLE 7

* Note: 18w luminaires can be used on E3/E4 roads if the average levels are exceeded using the 22w luminaire.

Birkdale Lantern

All other roads with Ornate lanterns will follow the Design Rationale Statement.

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Globe Lanterns

Units that are to be replaced with Globe lanterns will be replaced on a one for one basis with a 30W Wobbegong LED lantern (or 60W / 120W if a higher output is required in special circumstances) with a circular photometric distribution and dimmed to achieve the appropriate lighting class. In cases where the lighting class cannot be met, the lantern will be dimmed to reach the minimum lux level for the class at the opposite rear edge of the footpath, where possible.p

Wobbegong Lantern

K-LUX (Type C ornate) assets to be replaced on a one for one basis with a 30W Wobbegong LED lantern (or 60W / 120W if a higher output is required in special circumstances)

DESIGNING OF ZEBRA CROSSINGS WITH DEDICATED OR SUPPLEMENTARY LIGHTING

Whenever possible, zebra crossing dedicated or supplementary lighting is to be designed out.

Step 1 – If the existing street lighting arrangement achieves negative contrast on the zebra crossing, dedicated or supplementary lighting can be removed.

Step 2* – If the zebra crossing and its approaches achieve the conflict area requirements (Table 5) using the standard road lighting, the dedicated or supplementary lighting can be removed.

Step 3 – If Step 1 or 2 cannot be achieved, the dedicated or supplementary lighting on the zebra crossing is to replace with suitable LED lantern.

Zebra crossings with dedicated or supplementary lighting on unlit roads are to be designed in accordance with TR12.

* Note: Not applicable in case of Town Centre area.

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Design Variation Requests (DVRs)

For roads which do not achieve the lighting class, a standard DVR will be issued which will briefly describe the reason for the non-compliance. Each DVR will also be categorized by a risk rating, which will show KCC the level of non-compliance. Each DVR will be detailed on a column by column basis within the Design Schedule. All DVRs are detailed in Appendix E – Design Variation Requests.

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Appendix A – Initial Design Review Schedule

Minors & Footpaths / Alleyways

District	Document Reference
Ashford	0400-DFL-ASH-IDR-001-Rev*
Canterbury	0400-DFL-SHE-IDR-001-Rev*
Dartford	0400-DFL-DAR-IDR-001-Rev*
Dover	0400-DFL-DOV-IDR-001-Rev*
Gravesham	0400-DFL-GRA-IDR-001-Rev*
Maidstone	0400-DFL-MAI-IDR-001-Rev*
Sevenoaks	0400-DFL-SEV-IDR-001-Rev*
Shepway	0400-DFL-SHE-IDR-001-Rev*
Swale	0400-DFL-SWA-IDR-001-Rev*
Thanet	0400-DFL-THA-IDR-001-Rev*
Tonbridge & Malling	0400-DFL-TON-IDR-001-Rev*
Tunbridge Wells	0400-DFL-TUN-IDR-001-Rev*

TABLE 8

** Latest Revision*

Majors & Town Centres

District	Document Reference
Ashford	0400-DFL-ASH-IDR-002-Rev*
Canterbury	0400-DFL-SHE-IDR-002-Rev*
Dartford	0400-DFL-DAR-IDR-002-Rev*
Dover	0400-DFL-DOV-IDR-002-Rev*
Gravesham	0400-DFL-GRA-IDR-002-Rev*
Maidstone	0400-DFL-MAI-IDR-002-Rev*
Sevenoaks	0400-DFL-SEV-IDR-002-Rev*
Shepway	0400-DFL-SHE-IDR-002-Rev*
Swale	0400-DFL-SWA-IDR-002-Rev*
Thanet	0400-DFL-THA-IDR-002-Rev*
Tonbridge & Malling	0400-DFL-TON-IDR-002-Rev*
Tunbridge Wells	0400-DFL-TUN-IDR-002-Rev*

TABLE 9

** Latest Revision*

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Appendix B – Maintenance Factors & S/P Ratios

CU Phosco

Product	Environ Zone	Col Height	LLMF	x	LSF	x	LMF	=	Overall MF	S/P Ratio
P852-200-500mA	E1/E2	≤6m	0.95	x	0.97	x	0.92	=	**0.85**	1.64
	E1/E2	>6m	0.95	x	0.97	x	0.92	=	**0.85**	1.64
P852-550-1000mA	E1/E2	≤6m	0.90	x	0.97	x	0.92	=	**0.80**	1.64
	E1/E2	>6m	0.90	x	0.97	x	0.92	=	**0.80**	1.64
P852-200-500mA	E3/E4	≤6m	0.95	x	0.97	x	0.84	=	**0.77**	1.64
	E3/E4	>6m	0.95	x	0.97	x	0.92	=	**0.85**	1.64
P852-550-1000mA	E3/E4	≤6m	0.90	x	0.97	x	0.84	=	**0.73**	1.64
	E3/E4	>6m	0.90	x	0.97	x	0.92	=	**0.80**	1.64

TABLE 10

ASD Lighting

Product	Environ Zone	Col Height	LLMF	x	LSF	x	LMF	=	Overall MF	S/P Ratio
Highway Diamond	E1/E2	≤6m	0.95	x	0.97	x	0.92	=	**0.85**	1.68
	E1/E2	>6m	0.95	x	0.97	x	0.92	=	**0.85**	1.68
	E3/E4	≤6m	0.95	x	0.97	x	0.84	=	**0.77**	1.68
	E3/E4	>6m	0.95	x	0.97	x	0.92	=	**0.85**	1.68

TABLE 11

Thorn

Product	Environ Zone	Col Height	LLMF	x	LSF	x	LMF	=	Overall MF	S/P Ratio
CiviTEQ	E1/E2	≤6m	0.90	x	1.00	x	0.92	=	**0.83**	1.50
	E1/E2	>6m	0.90	x	1.00	x	0.92	=	**0.83**	1.50
	E3/E4	≤6m	0.90	x	1.00	x	0.84	=	**0.76**	1.50
	E3/E4	>6m	0.90	x	1.00	x	0.92	=	**0.83**	1.50

TABLE 12

RBA

Product	Environ Zone	Col Height	LLMF	x	LSF	x	LMF	=	Overall MF	S/P Ratio
Muirfield / Birkdale	E1/E2	≤6m	0.90	x	0.95	x	0.92	=	**0.79**	1.60
	E1/E2	>6m	0.90	x	0.95	x	0.92	=	**0.79**	1.60
	E3/E4	≤6m	0.90	x	0.95	x	0.84	=	**0.72**	1.60
	E3/E4	>6m	0.90	x	0.95	x	0.92	=	**0.79**	1.60

TABLE 13

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CU Phosco – P863 >6m & ≤6m (E1/E2)

CU P863						
mA	LLMF P863-32	LLMF P863-16	LSF	LMF (72m)	**MF P863-32**	**MF P863-16**
1000	0.90	0.95	0.97	0.92	**0.80**	**0.85**
900	0.92	0.97	0.97	0.92	**0.82**	**0.87**
800	0.94	0.99	0.97	0.92	**0.84**	**0.88**
700	0.96	0.99	0.97	0.92	**0.86**	**0.88**
600	0.98	0.99	0.97	0.92	**0.87**	**0.88**
500	0.99	0.99	0.97	0.92	**0.88**	**0.88**
400	0.99	0.99	0.97	0.92	**0.88**	**0.88**
300	0.99	0.99	0.97	0.92	**0.88**	**0.88**

TABLE 14

CU Phosco – P863 ≤6m (E3/E4)

CU P863						
mA	LLMF P863-32	LLMF P863-16	LSF	LMF (72m)	**MF P863-32**	**MF P863-16**
1000	0.90	0.95	0.97	0.84	**0.73**	**0.77**
900	0.92	0.97	0.97	0.84	**0.75**	**0.79**
800	0.94	0.99	0.97	0.84	**0.77**	**0.81**
700	0.96	0.99	0.97	0.84	**0.78**	**0.81**
600	0.98	0.99	0.97	0.84	**0.80**	**0.81**
500	0.99	0.99	0.97	0.84	**0.81**	**0.81**
400	0.99	0.99	0.97	0.84	**0.81**	**0.81**
300	0.99	0.99	0.97	0.84	**0.81**	**0.81**

TABLE 15

CU Phosco – P862 >6m

CU P862						
mA	LLMF P862-64	LLMF P863-32	LSF	LMF (72m)	**MF P862-**	**MF P863-16**
1000	-	0.90	0.97	0.92	**-**	**0.80**
900	-	0.92	0.97	0.92	**-**	**0.82**
800	0.91	0.94	0.97	0.92	**0.81**	**0.84**
750	0.95	0.95	0.97	0.92	**0.85**	**0.85**
700	0.93	0.96	0.97	0.92	**0.83**	**0.86**
600	0.95	0.98	0.97	0.92	**0.85**	**0.87**
500	0.97	0.99	0.97	0.92	**0.87**	**0.88**
400	0.99	0.99	0.97	0.92	**0.88**	**0.88**
300	0.99	0.99	0.97	0.92	**0.88**	**0.88**

TABLE 16

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Armadillo LED

Product	Environ Zone	Col Height	LLMF	x	LSF	x	LMF	=	Overall MF	S/P Ratio
Wobbegong	E1/E2	≤6m	0.97	x	1	x	0.92	=	**0.89**	1.65
	E1/E2	>6m	0.97	x	1	x	0.92	=	**0.89**	1.65
	E3/E4	≤6m	0.97	x	1	x	0.84	=	**0.81**	1.65
	E3/E4	>6m	0.97	x	1	x	0.92	=	**0.89**	1.65

TABLE 17

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Appendix C – Example Design Schedule

Calculation Ref *20501234-Ashford-Ashford Street-R0*
Designed *R. Jackson*
Approved *A. Longman*

Lighting Class	Ambient illuminance (Env Zone)	Traffic Flow
P4	*E3/E4*	*N/A*

Design Notes

USRN	WARD	STREET	PLOT NUMBER	UNIT NO	LOCATION	HEIGHT	COLUMN	CUTBACK BRACKET [Y/N]	BRACKET LENGTH	Tilt [5/10/15]	PROPOSED LANTERN	DESIGN COMMENTS [DVR's / Other]	QHES [Trees / TM / Other]
20501234	*Ashford*	*Ashford Street*	*200001*	*1*	*Outside property 4*	*6m*	*Steel*	*Y*	*0.5m*	*5*	*Urbis Axia .....[Full spec]*	*DVR01-R*	

Columns A-K from Inventory
Columns J-K from Lighting Reality
Column L - Designer Input
Column M - Bouygues Input

TABLE 1

Appendix D – Isolated Lights

Proposed Class	Comparable P Class	Existing Lantern	Lumen Output	Proposed Manufacturer	S/P Adjustment *Manufacturer Specific*	Proposed Lumen reduction	Proposed Lumen Output *(≥)*

TABLE 2

Appendix E – Design Variation Requests

Minor Schemes

		Green	Amber	Red
DVR-01	Excessive Spacing on “P” Class	Levels not met at rear of footpath	Levels not met at kerb edge	Levels not meet at centre of roadway
DVR-02	Excessive Average levels on “P” Class	All instances		
DVR-03	Minimum levels not achieved on “P” Class	Levels not met at rear of footpath	Levels not met at kerb edge	Levels not meet at centre of roadway
DVR-04	Excessive Spacing on “M” Class			All instances
DVR-05	Low Uniformity on “M” Class			All instances
DVR-06	Low Average on “C” Class			All instances
DVR-07	Low Uniformity on “C” Class	<40%≥30%	<30%≥20%	<20%
DVR-08	Theoretical “C” Class minimum levels not achieve	Levels not met at rear of footpath	Levels not met at kerb edge	Levels not met at centre of roadway

TABLE 3

Major Schemes

		Green	Amber	Red
DVR-01	Excessive Spacing on “P” Class	Levels not met at rear of footpath	Levels not met at kerb edge	Levels not meet at centre of roadway
DVR-02	Excessive Average levels on “P” Class	All instances		
DVR-03	Minimum levels not achieved on “P” Class	Levels not met at rear of footpath	Levels not met at kerb edge	Levels not meet at centre of roadway
DVR-04	Minimum Average levels on “P” Class			All instances
DVR-05	Insufficient column height to achieve lighting class			All instances
DVR-06	Low Average on “C” Class			All instances
DVR-07	Low Uniformity on “C” Class	<40%≥30%	<30%≥20%	<20%
DVR-08	Theoretical “C” Class minimum levels not achieve	Levels not met at rear of footpath	Levels not met at kerb edge	Levels not met at centre of roadway

TABLE 4

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Appendix F – Town Centre Special Requirements

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